NCTIP

National Center for Transportation and Industrial Productivity
New Jersey Institute of Technology

To: **Nick Vitillo**

Title: **NCTIP Quarterly Reports**

Time Period: **Fourth Quarter, 2003**

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Quarterly Progress Report

Project Title:	**Effectiveness of Bus Nubs for Bus Stops - Mod.1**
RFP Number: 2000-25	**NJDOT Research Project Manager:** Vincent Nichnadowicz
Task Order Number/Study Number: NCTIP-43	**Pincipal Investigator:** Daniel, Janice R.
Period Starting: 1/02/02 - 6/30/04 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Task A. Perform a literature review.	5%	0	100%	5%
Task 1. Identify a limited number of urban bus stop locations that could be considered for bus nub installation.	10%	0	100	10%
Task 2. Develop from the literature or elsewhere a specification document that provides measurements and guidance for proposed test bus nubs to be built.	10%	10	95	9.5%
Task 3. Prepare plans in sufficient detail for the agreed upon test nubs to allow for contractor installation.	5%	0	70	3.5%
Task 4. Develop a methodology to evaluate effectiveness of the alternate	5%	0	90	4.5%
Task 5. Conduct a before data collection	10%	10	92	9.2
Task 6. Install bus nubs.	20%	0%	0%	0%
Task 7. Conduct an after data collection.	10%	0%	0%	0%
Task 8. Analyze the data.	10%	10	95	9.5
Task 9. With the assistance of NJDOT and NJ Transit, develop for general publication a document explaining the rules and guidelines for the use of	5%	0%	0%	0%
Task 10. Prepare a project schedule to submit a quarterly, interim and final report that document the entire research effort.	10%	0	20%	2%
Final Report				
TOTAL	100 %			53.2 %

1.Progress this quarter by task:

At the last quarterly meeting, the research team was encouraged to seek an extension for the project to provide additional field measurements of bus re-entry delays. An extension was requested and granted providing an additional six months in the project. During the past quarter the research team has been involved in first identifying locations appropriate for collecting bus re-entry delays. The research team sought to identify locations with moderate to heavy traffic volumes, moderate to heavy passenger volumes, bus stop geometry that

prevented the bus from remaining in the curb lane after picking up or discharging passengers, and locations where it was observed that the bus pulled into the curb lane. Field studies were performed at three locations with favorable characteristics for bus re-entry delays. The data has been compiled showing that the bus re-entry delay is very stochastic and highly dependent on the bus operator's driving behavior. Field studies indicate that at locations where the bus operator is aware that there will be re-entry delays, the bus operator does not pull into the curb area, but stops in the travel lane. The research team also observed that bus re-entry delays, in general, were not observed on roadways with more than one approach lane. When more than one approach lane exist, vehicles passing the bus were observed to change lanes and travel in the far left lane, eliminating any re-entry delays.

2. Proposed activities for next quarter by task:

During the next quarter, additional field studies will be performed to better understand conditions that result in high bus re-entry delays and to use the data collected to quantify expected bus re-entry delays. The research team hopes to develop a methodology for calculating the bus re-entry delay, which is a significant portion of the bus travel time savings when a bus nub is installed. Given this methodology, the bus re-entry delay will be able to be calculated in determining potential bus travel time savings due to the installation of a bus nub.

3. List of deliverables provided in this quarter by task (product date):

None

4. Progress on implementation and training activities:

None

5. Problems/proposed solutions:

The Tasks and percentage completion of the tasks reflect the original scope of this project. Due to the inability of NJDOT/NJ Transit to construct the bus nubs, the tasks no longer reflect the current focus of the research. The percent complete reflects the completion based on the old list of tasks, but does not reflect the percent completion based on the current focus of the research.

6. Budget summary:

Total Project Budget (# Years)	2 Year	$118,785.00
Total Project Expenditure to date		$96,898.00
% of Total Project Budget Expended		81.57%
Task Order Number/ Study Number	2 Year	NCTIP-43
Current Task Order Budget (# of Years)		$62,906.00
Actual Expenditure to Date Against Current Task Order		$0.00
% of Current Task Order Budget Expended		0.00%

Quarterly Progress Report

Project Title:	**Assess Impacts and Potential Benefits of Traffic Signal Priority for Buses**
RFP Number: 2000-28	**NJDOT Research Project Manager:** Nick Vitillo
Task Order Number/Study Number: NCTIP-45	**Pincipal Investigator:** Daniel, Janice R.
Period Starting: 1/02/002 - 06/30/03 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Phase I. Assemble, Review & Synthesize Literature	10%	0	100%	10%
Task 1. Survey Existing Systems Using Priority	15%	0	100	15%
Task 2. Identifying Promising Locations and Develop Plans	25%	0	100	25%
Task 3. Assessment of Operational Plans	25%	0	100	25%
Task 4. Prepare Reports	25%	5	85	21.25%
Final Report				
TOTAL	100 %			96.3 %

1.Progress this quarter by task:

At the last quarterly meeting, the research team was encouraged to seek an extension for the project to allow benefit/cost ratios to be calculated and to examined. An extension was requested and granted providing a six month extension that would allow the researchers to determine benefit/cost ratios for each intersection and to allow the chapter on "Operational Test Plans" provided in the Draft Final Report to be re-examined and expanded to include factors that should be accounted for to implement signal priority as part of Bus Rapid Transit. During the past quarter the research team has been involved in applying FHWA's Signal Priority Benefit Assessment procedure to Broad Street to calculate benefit/cost ratio. Information is being acquired on the impacts of priority at various intersections along the Broad Street study area to apply the assessment procedure on an intersection basis.

2. Proposed activities for next quarter by task:

The research team will continue to work on developing benefit/cost ratios and to expand the chapter on "Operational Test Plans". The research team will continue to respond to comments received about the Draft Final Report.

3. List of deliverables provided in this quarter by task (product date):

None

4. Progress on implementation and training activities:

None

5. Problems/proposed solutions:

None

6. Budget summary:

Total Project Budget (# Years)	1 Year	$281,008.00
Total Project Expenditure to date		$103,711.00
% of Total Project Budget Expended		36.91%
Task Order Number/ Study Number	1 Year	NCTIP-45
Current Task Order Budget (# of Years)		$138,109.00
Actual Expenditure to Date Against Current Task Order		$103,711.00
% of Current Task Order Budget Expended		75.09%

Quarterly Progress Report

Project Title:	**Study of Optimal Travel Speed Limits for Shared Traffic**
RFP Number: 2002-28	**NJDOT Research Project Manager:** Karl Brodtman
Task Order Number/Study Number: NCTIP-043	**Pincipal Investigator:** Yang, Jian
Period Starting: 01/01/2003 - 12/31/2003 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Phase 1. Literature Review	10	0	100	10
Task 1. Review Current Speed Limit Criteria	10	0	100	10
Task 2. Compare NJ Speed Limit Criteria to Others	10	0	100	10
Task 3. Review Attributes for Low-speed Roads	10	0	90	9
Task 4. Assess Data	15	0	100	15
Task 5. Identify Speed Factors	15	0	100	15
Task 6. Establish Procedure for Setting Speeds	10	30	80	8
Task 7. Identify Locations for Implementation	10	20	20	2
Task 8. Final Report	10	20	70	7
Final Report				
TOTAL	100 %			86.0 %

1.Progress this quarter by task:

We ran linear regression to pedestrian accident data to establish the relationship between pedestrian accident frequencies and roadway characteristics including posted speed limits. Once established, this relationship along with the injury severity results and operational characteristics from running the CORSIM model will help identity the ideal travel speed limits for roadways.

We also collected data on intersections on Route 27 and started to run CORSIM on the data to study the impacts of speed limit reductions on various roadway operational parameters from travel delays to emissions.

2. Proposed activities for next quarter by task:

We are to continue the study on the accident frequency model and the operational module. For several roadway segments, we are to propose ideal speed limits using formulas based on our accident frequency and seveerity models and results from the operational studies. We will also conduct survey to learn customer acceptance of our proposed speed limits.

3. List of deliverables provided in this quarter by task (product date):

4. Progress on implementation and training activities:

5. Problems/proposed solutions:

6. Budget summary:

Total Project Budget (# Years)	1 Year	$172,641.00
Total Project Expenditure to date		$85,777.00
% of Total Project Budget Expended		49.69%
Task Order Number/ Study Number	1 Year	NCTIP-043
Current Task Order Budget (# of Years)		$0.00
Actual Expenditure to Date Against Current Task Order		$0.00
% of Current Task Order Budget Expended		0.00%

Quarterly Progress Report

Project Title:	**Effectiveness of Certain Design Solutions on Reducing Vehicle Speeds - Year I**
RFP Number: 37	**NJDOT Research Project Manager:** Karl Brodtman
Task Order Number/Study Number: NCTIP-37	**Pincipal Investigator:** Daniel, Janice R.
Period Starting: 1/1/2003 - 6/30/2004 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
PHASE I - Literature Search	15	10	70	10.5
Task 1. Presentation of Findings	5	0	100	5
Task 2. Accident Analysis	20	0	100	20
Task 3. Human Factors Study	40	10	45	18
Task 4. Plan and Budget Development	10	0	0	0
Task 5. Reporting	10	5	10	1
Final Report				
TOTAL	100 %			54.5 %

1.Progress this quarter by task:

During the past quarter, the research team has been involved in finalizing the Traffic Calming Survey for use in performing the human factors study. The survey includes a total of 7 questions asking about the respondent's trip purpose, travel behavior, and allows the respondent to rate 4-6 traffic calming measures on the measure's ability to reduce speed, the convenience of the measure to other users of the roadway, and on the aesthetics of the traffic calming measure. The research team had hoped to administer this survey to one location on Route 27 in New Brunswick during the month. During one of the final visits to the site prior to the survey, the research team discovered that the study location was plagued with several problems that could only be observed during the peak period. During the PM peak period, the roadway is heavily congested, resulting in inappropriate pedestrian and bicycle maneuvers. Also, the site is missing some standard traffic control elements, such as striped pedestrian crosswalk, redundant signal heads, that may be the reason for the high number of pedestrian and bicycle accidents at this location. Administering the Traffic Calming Survey at this location was then postponed until further information could be obtained about any existing roadway modifications for this area.

Since then the research team has studied two potential locations for administering the Traffic Calming Survey on Route 35 in Perth Amboy and Route 28 in Plainfield . A detailed accident analysis has been performed at these

locations to identify the conditions under which these accidents are occurring. Field visits have been made to both locations during different times of the day.

2. Proposed activities for next quarter by task:

During the next quarter, the research team hopes to administer the Traffic Calming Survey factors study on Routes 28 and 35. An on-line version of the survey has been developed. The team will purchase the names and addresses of businesses and homeowners adjacent to the study area. The survey will either be mailed to these addresses or a letter sent requesting the participation of the businesses and homeowners in a focus group where the survey will be administered.

3. List of deliverables provided in this quarter by task (product date):

Technical Memoradum on the national and international literature search.

4. Progress on implementation and training activities:

5. Problems/proposed solutions:

6. Budget summary:

Total Project Budget (# Years)	1 Year	$153,232.00
Total Project Expenditure to date		$43,034.00
% of Total Project Budget Expended		28.08%
Task Order Number/ Study Number	1 Year	NCTIP-37
Current Task Order Budget (# of Years)		$76,822.00
Actual Expenditure to Date Against Current Task Order		$43,034.00
% of Current Task Order Budget Expended		56.02%

Quarterly Progress Report

Project Title:	**Improvement of Continuity Connections Over Fixed Piers - Year 3**
RFP Number: 2000-23	**NJDOT Research Project Manager:** Tony Chmeil
Task Order Number/Study Number: TO-27	**Pincipal Investigator:** Saadeghvaziri, M. A.
Period Starting: 1/1/2001 - 12/31/2003 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature review	4	0	100	4
FEA work	21	4.7	100	21
Instrumentation/In-field measurements	21	0	100	21
Comparison/FEA	14	14.3	100	14
Recommendations for changes to existing design	9	0	100	9
Interim report	2	0	100	2
New connection	16	7.5	70	11.2
Laboratory tests	5	40	80	4
Specs.	5	20	20	1
Final report	3	0	0	0
Final Report				
TOTAL	100 %			87.2 %

1.Progress this quarter by task:

Additional tests were conducted using two simply supported specimens and FRP strips. Results point to the need for use of a more ductile FRP material.

FRP wraps, which are more ductile, have been obtained. Specimens were cast to perform small preliminary tests using FRP wraps.

Have started development of the application tool.

2. Proposed activities for next quarter by task:

Test small specimens to assess performance and bonding of FRP wraps.

Continue coding of the application tool.

3. List of deliverables provided in this quarter by task (product date):

4. Progress on implementation and training activities:

5. Problems/proposed solutions:

6. Budget summary:

Quarterly Progress Report

Total Project Budget (# Years)	3 Year	$226,319.00
Total Project Expenditure to date		$107,696.00
% of Total Project Budget Expended		47.59%
Task Order Number/ Study Number	2 Year	TO-27
Current Task Order Budget (# of Years)		$152,376.00
Actual Expenditure to Date Against Current Task Order		$107,696.00
% of Current Task Order Budget Expended		70.68%

Quarterly Progress Report

Project Title:	**Survey of Transit/Rail Freight Interactions**
RFP Number: 2002-19	**NJDOT Research Project Manager:** NJ DOT
Task Order Number/Study Number: NCTIP-040	**Pincipal Investigator:** Liu, Rachel
Period Starting: January 1, 20 - December 20 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Review	10	100	100	10
Survey of Peer Transit Agencies	40	100	100	40
key factors of successful interaction	30	80	90	27
Case studies	10	40	40	4
Final Report	10			
Final Report				
TOTAL	100 %			81.0 %

1.Progress this quarter by task:

To date, we have conducted literature and are in the process of compiling the technical memorandum documenting the literature gathered and topics that pertinent to this research project.

2. Proposed activities for next quarter by task:

Survey transit systems composed of various commuter rail, light rail, and havey rail systems around the United States. One of the concentrated surveys will be conducted at the APTA commuter raill conference

3. List of deliverables provided in this quarter by task (product date):

Technical Memorandum of Literature Review

4. Progress on implementation and training activities:

IN progress

5. Problems/proposed solutions:

6. Budget summary:

Total Project Budget (# Years)	1 Year	$129,313.00
Total Project Expenditure to date		$39,638.00
% of Total Project Budget Expended		30.65%
Task Order Number/ Study Number	1 Year	NCTIP-040
Current Task Order Budget (# of Years)		$129,313.00
Actual Expenditure to Date Against Current Task Order		$19,638.00
% of Current Task Order Budget Expended		15.19%

Quarterly Progress Report

Project Title:	**Mobility Information Needs of Limited English Proficiency People In NJ - Year I**
RFP Number: 2002-20	**NJDOT Research Project Manager:** New Jersey DOT
Task Order Number/Study Number: NCTIP-039	**Pincipal Investigator:** Liu, Rachel
Period Starting: January 1, 20 - December 20 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Review	10	100	100	10
Idnetify Source of Infomatin on LEP Groups	5	100	100	5
Identify and Classify the NJLEP population	5	100	100	5
Survey of LEp population	10	90	100	10
Survey of transit agencies	10	20	90	9
Survey of international oriented activity centers	10	20	50	5
Survey of selected international transit agencies	10	10	20	2
Non-visual practice	10	10		
Synthesizing w/Non visual practices	10			
Synthesizing w/market research	10			
Best practice results	10			
Final Report				
TOTAL	100 %			46.0 %

1.Progress this quarter by task:

To date, we have conducted literature review and are in the process of composing the literature reveiw Technical Memorandum.

We also searched the data sources of LEP population, and contacted various groups for future surey

2. Proposed activities for next quarter by task:

Conduct surveys of community groups in NJ and analysize the mobility information needs of such groups

3. List of deliverables provided in this quarter by task (product date):

Technical Memorandum on demographics of LEP travelers in NJ

4. Progress on implementation and training activities:

In Progress

5. Problems/proposed solutions:

6. Budget summary:

Quarterly Progress Report

Total Project Budget (# Years)	2 Year	$230,499.00
Total Project Expenditure to date		$57,600.00
% of Total Project Budget Expended		24.99%
Task Order Number/ Study Number	1 Year	NCTIP-039
Current Task Order Budget (# of Years)		$161,377.00
Actual Expenditure to Date Against Current Task Order		$15,768.00
% of Current Task Order Budget Expended		9.77%

Quarterly Progress Report

Project Title:	**Survey of Driver Perceptions of Railroad and Light Rail Warning Devices/Grade Crossings - Year 2**
RFP Number: 2001-33	**NJDOT Research Project Manager:** Karl Brodtman
Task Order Number/Study Number: NCTIP-33	**Pincipal Investigator:** Jeng, One-Jang
Period Starting: 1/1/2002 - 12/31/2003 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Phase I-Literature Search: Conduct a literature search of the current state of the practice	10	0	100	10
Phase II-Research Approach: Task 1: Determine the various types of railroad and light rail highway grade crossings in New Jersey	5	0	100	5
Task 2: Conduct a survey of other states for information	10	0	100	10
Task 3a: Catalog the individual active and passive railroad/light rail crossing devices in New Jersey	5	0	100	5
Task 3b: Arrange the devices in groups that would be found at typical crossings as found in the classification system in Task 1	5	0	100	5
Task 4: Setup of laboratory experimental tasks, video and still image editing, programming for recording subject responses and data processing	15	0	100	15
Conduct a pilot study for the experiments; finalize experiment procedures	10	0	100	10
Conduct formal laboratory experiments	10	10	85	8.5
Perform data processing and statistical analysis for the laboratory experiments	10	20	70	7
Task 5: Technical Memorandum on the driver manual chapters, exam questions and answers	10	10	60	6
Task 6: Prepare and deliver the finalt report	10	30	30	3
Final Report				
TOTAL	100 %			84.5 %

1.Progress this quarter by task:

During the reported quarter, the research team conducted a laboratory experiment to test 40 subjects about their perception toward traffic control devices (advanced warning sings, traffic lights, traffic signs, and pavement making) at railroad crossing areas. Subjects were recruited from NJIT campus and off campus. Subjects included 30 subjects possessing the regular driver's license and 10 with commercial driver's license (five truck drivers and five school bus drivers). Results of the laboratory experiment showed that subjects had diverse perceptions about meanings and responses to

different traffic control devices at railroad crossings. The laboratory experiment results suggest that there is a need to include some information regarding driving at railroad crossings in all driver's manuals. The experiment results were sent to Dr. Srinivasan, consultant of the project, to revise the draft railroad section that he has been working on.

In addition to the progress in the laboratory experiment, the research team also obtained over 200 driving test questions from various sources. It was found that only less than 5 questions out of over 200 questions related to railroad crossings. The research team compiled the questions and worked on making driving test questions which deal with railroad crossing scenarios. A second laboratory test will be conducted in January to test the effectiveness of a railroad section for the New Jersey driver's manuals.

2. Proposed activities for next quarter by task:

The next quarter will be the last quarter for the project. There will be a performance evaluation on drier's perception and understanding of warning signs and responses at railroad crossing comparing subjects who read the proposed railroad crossing section for the New Jersey driver's manual and those who read the current New Jersey driver's manual. A draft project report will be submitted to NJDOT for comments in January.

3. List of deliverables provided in this quarter by task (product date):

4. Progress on implementation and training activities:

5. Problems/proposed solutions:

6. Budget summary:

Total Project Budget (# Years)	2 Year	$207,454.00
Total Project Expenditure to date		$140,424.00
% of Total Project Budget Expended		67.69%
Task Order Number/ Study Number	2 Year	NCTIP-33
Current Task Order Budget (# of Years)		$80,790.00
Actual Expenditure to Date Against Current Task Order		$58,542.00
% of Current Task Order Budget Expended		72.46%

Quarterly Progress Report

Project Title:	**Fatigue Management, Rail Operations Personnel - Year II**
RFP Number: 36	**NJDOT Research Project Manager:** Karl Brodtman, NJDOT
Task Order Number/Study Number: 36	**Pincipal Investigator:** Jeng, One-Jang
Period Starting: 1/1/2002 - 6/30/2004 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Phase I : Literature Search	5	0	100	5
Phase II : Research Approach Task 1 : Detailed Literature Search	10	0	100	10
Task 2: Presentation of Literature Findings	5	0	100	5
Task 3: Determine Existing HOS guidelines	25	0	100	25
Task 4: Prepare HOS model for Crew Schedule Assessment and Design Tool	30	25	85	25.5
Task 5: Prepare a Request for Proposal	15	40	55	8.25
Task 6: Reporting	10	20	60	6
Final Report				
TOTAL	100 %			84.8 %

1.Progress this quarter by task:

NJIT met with a representative from the United Transportation Union (UTU) to discuss the overall project and the operator survey. A follow-up meeting was held with additional representatives from the UTU. The UTU requested that NJIT revise the survey to incorporate their comments. Representatives also requested that NJIT take on full responsibility for administering the survey. Requested modifications were included into a revised survey and will be distributed to selected operator personnel.

NJIT's subconsultant, Circadian Technologies, Incorporated, provided some language for the Request for Proposal, which will be prepared concurrently with the survey.

2. Proposed activities for next quarter by task:

Finalize and administer survey and summarize results. Based on this information, the research team can commence subsequent tasks.

Prepare the Request for Proposal.

Prepare draft Final Report.

3. List of deliverables provided in this quarter by task (product date):

4. Progress on implementation and training activities:

5. Problems/proposed solutions:

6. Budget summary:

Total Project Budget (# Years)	2 Year	$221,017.00
Total Project Expenditure to date		$186,224.00
% of Total Project Budget Expended		84.26%
Task Order Number/ Study Number	2 Year	36
Current Task Order Budget (# of Years)		$61,065.00
Actual Expenditure to Date Against Current Task Order		$46,195.00
% of Current Task Order Budget Expended		75.65%

Quarterly Progress Report

Project Title:	**Improving Public Transit Schedules, Timetables People Can Actually Read**
RFP Number: 22-2002	**NJDOT Research Project Manager:** Edward Kondrath
Task Order Number/Study Number: 38	**Pincipal Investigator:** Fallat, George Alexander
Period Starting: Jan 1, 2003 - Dec 31, 200 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Task 1, Phase 1 – Literature Search	10	25	100	10
Task 1, Phase 2. Presentation of Literature Review Findings	5	100	100	5
Task 2: Develop a Proposed Methodology	10	25	75	7.5
Task 3: Apply New Wayfinding Methods	10	90	100	10
Task 4: Administer Survey	15	25	75	11.25
Task 5 – Compile Survey Results	10	25	50	5
Task 6 – Prepare Guidelines	20	50	50	10
Task 7 - Reporting	20	20	80	16
Final Report				
TOTAL	100 %			74.8 %

1.Progress this quarter by task:

Based on the results of the literature review, focus group meetings and discussions with NJ TRANSIT staff, two prototype schedules were developed, presented to and discussed with the full research team. Based on the results of these discussions as well as our review, the prototypes were further modified. NJ TRANSIT agreed to produce the prototype schedules at their facilities to identify any potential production difficulties.

NJIT conducted some preliminary test runs were. It was found that further modifications to the schedule are necessary to better distinguish weekday and non-weekday timetables. At the present time, the revised prototypes have been provided to NJ TRANSIT schedule production staff. Once completed, pilot tests will again be conducted and the schedules will be re-revised, if necessary.

The full time performance study will be conducted upon completion of the prototypes.

A first draft report has been prepared and was distributed to the research team for review. This document contains our preliminary findings, recommendations and schedule development guidelines. However, the results of the final time trial tests have not been included in the report.

2. Proposed activities for next quarter by task:

Finalize prototypes.

Conduct performance tests of prototypes.
Prepare second draft report.
Prepare Final Report

3. List of deliverables provided in this quarter by task (product date):

Task 1. Draft Literature Search submitted. Task 2. Detailed literature submitted.
Task 3. Focus group sessions completed and draft meeting minutes prepared.

4. Progress on implementation and training activities:

None to date

5. Problems/proposed solutions:

6. Budget summary:

Total Project Budget (# Years)	1 Year	$157,239.00
Total Project Expenditure to date		$71,750.00
% of Total Project Budget Expended		45.63%
Task Order Number/ Study Number	1 Year	38
Current Task Order Budget (# of Years)		$117,662.00
Actual Expenditure to Date Against Current Task Order		$61,681.00
% of Current Task Order Budget Expended		52.42%

Quarterly Progress Report

Project Title:	**Study to Determine the Need for Innovative Concept of Container Transportation System**
RFP Number:	**NJDOT Research Project Manager:** Dr. Nazhat Aboobaker
Task Order Number/Study Number: NCTIP-044	**Pincipal Investigator:** Dimitrijevic, Branislav
Period Starting: 01/01/03 - 03/31/04 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Task 1: Literature Search	10	15	100	10
Task 2: Screening Evaluation	20	85	100	20
Task 3: Optimal System Design Selection Framework	30	70	70	21
Task 4: Case Studies of Selected Technologies	30	15	25	7.5
Task 5: Training and Implementation	10	0	0	0
Final Report				
TOTAL	100 %			58.5 %

1.Progress this quarter by task:

Phase II – Task 1: Screening Evaluation

- The task has been completed. Final set of evaluation criteria has been defined and it will be used to compare technologies and analyze their performance using proposed case studies.
- Decision matrix has been formulated that contains evaluation criteria grouped in four general categories: financial impacts, socio-economic impacts, transportation system performance, and environmental impacts. This matrix will be used to evaluate candidate technologies in selected case studies.
- The draft engineering decision matrix was refined to provide a better interface with the general decision matrix.
- Available technical and other information on examined technologies has been collected.

Phase II – Task 2: Optimal System Design Selection Framework

- Technology evaluation and selection framework is developed based on principles of multicriteria analysis.
- Framework outlines the procedures to evaluate technologies based on both quantifiable and non-quantifiable variables.
- Alternative technologies will be compared and ranked based on multiple criteria using weighting factors that would express the level of importance (or significance) of each criterion as compared to others.
- Multicriteria analysis will be conducted for each case study.

Phase II – Task 3: Case Studies of Selected Technologies
- A working network of freight mover alignments was developed based upon an analysis of the region and comments received from the project steering committee.
- ROW requirements are established for each technology and each alignment (case study).
- The geological and environmental conditions along each alignment were delineated and logged using the GIS data base created during the previous quarter.

2. Proposed activities for next quarter by task:

Phase II – Task 2: Optimal System Design Selection Framework
- Evaluation procedures will be further improved based on available data for measures defined for decision criteria.

Phase II – Task 3: Case Studies of Selected Technologies
- The various freight mover technologies will be evaluated for each alignment using established criteria and measures of performance for each criterion.
- Technologies will also be evaluated for each alignment leg to establish relative construction costs and environmental impacts. Technologies will be rank-ordered for each alignment using the engineering decision matrix, and results will be incorporated into the general decision matrix.
- Sensitivity analysis of the results will be conducted.

Following the completion of all the tasks final report will be prepared and submitted to the RPSIP.

3. List of deliverables provided in this quarter by task (product date):

N/A

4. Progress on implementation and training activities:

N/A

5. Problems/proposed solutions:

6. Budget summary:

Total Project Budget (# Years)	1 Year	$133,748.00
Total Project Expenditure to date		$29,500.00
% of Total Project Budget Expended		22.06%
Task Order Number/ Study Number	1 Year	NCTIP-044
Current Task Order Budget (# of Years)		$133,748.00
Actual Expenditure to Date Against Current Task Order		$29,500.00
% of Current Task Order Budget Expended		22.06%

Quarterly Progress Report

Project Title:	**Economic and Quality of Life Impacts of Route 21 Freeway Construction - Year II**
RFP Number: 2001-08	**NJDOT Research Project Manager:** R Sasor
Task Order Number/Study Number: NCTIP-034	**Pincipal Investigator:** Golub, Eugene
Period Starting: 01/01/2002 - 12/31/2006 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Phase I: Literature Review	3	0	100	3
Task 1: Pre-construction, economic conditions	4	0	100	4
Task 2: Familiarization with Route 21	4	0	100	4
Task 3: Familiarization with Context Design	4	0	100	4
Task 4: Familiarization with Baseline data	4	0	100	4
Task 5: Develop study methodologies	75	5	30	22.5
Task 6: Prepare interim annual reports	3	5	40	1.2
Task 7: Prepare quarterly / final reports	3	6	30	0.9
Final Report				
TOTAL	100 %			43.6 %

1.Progress this quarter by task:

Phase1 The literature search is complete.
Task3 Familiarization with CSD is almost complete. Additional work includes discussion with other NJDOT personnel as to how CSD was applied on this project.

Task2 Familiarization with the Rt 21 design and Baseline Data is complete. The NJDOT data has been obtained and has been reviewed. Additional data is being developed from other local and County Sources.

Task4 The project team has complted review of NJDOT 2001 baseline data.

Task5 A photographic record of the project has been undertaken and is near completion. It includes photoscapes of the area in proximity of the project as well as photos of the areas thought to be of importance by the NJDOT. these records are compiled on CD's.

Professional staff from both communities were individually interviewed and a compilation is being developed. Further, the local merchant associations have likewise been interviewed.

Surveys have been sent to elected officials & professional staff in both

municipalities. Individual surveys are being conducted with merchants in both municipalities.

Traffic counts are being conducted at key intersections as per NJDOT original studies.

Noise readings are being taken at key locations as per original NJDOT studies.

Data is being compiled for Clifton on all sales of properties and the variation in prices as well as the total assessed valuation of the town for the last 10 years. Similar data has been requested from Passaic.

Accident data in the two towns is in the process of being developed to demonstrate changes that have occurred in the last few years.
Additional photography has been taken at important locations.
Base photographic record is being digitized for a permanent record that is easily organized.
We are obtaining sales reports from City of Passaic.
Surveys have been digitized and analyzed.
An interim annual report has been submitted in draft form. This has been finalized this quarter.

The photographic record taken during the project has been digitized and is in the process of being organized into a usable computer file.

Planning for the second year analysis and data gathering has been completed.
The photographic record taken during the project has been digitized and has been organized into a usable computer file.
The Interim Annual Report has been reviewed by NJDOT, Clifton & Passaic and their comments included in the report.

Interviews were obtained from businesses along Main Avenue in both Passaic & Clifton.

A photographic record was taken along South St in Passaic.

State accident data was obtained for Clifton & Passaic.

Sales data of properties in Passaic & Clifton.

2. Proposed activities for next quarter by task:

New data will be gathered in surveys, photography. Economic data and accident reports obtained will be analyzed to obtain trends.

3. List of deliverables provided in this quarter by task (product date):

4. Progress on implementation and training activities:

5. Problems/proposed solutions:

6. Budget summary:

Total Project Budget (# Years)	5 Year	$293,327.00
Total Project Expenditure to date		$110,650.00
% of Total Project Budget Expended		37.72%
Task Order Number/ Study Number	2 Year	NCTIP-034
Current Task Order Budget (# of Years)		$55,165.00
Actual Expenditure to Date Against Current Task Order		$45,000.00
% of Current Task Order Budget Expended		81.57%

Quarterly Progress Report

Project Title:	**Good Neighbor Privacy Fence - Year II**
RFP Number: 2001-14	**NJDOT Research Project Manager:** R Sasor
Task Order Number/Study Number: nctip-35	**Pincipal Investigator:** Golub, Eugene
Period Starting: 01/01/2002 - 12/31/2003 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
phase 1- Literature review	8	0	100	8
Task 1: Partner with industry	8	5	75	6
Task 2: Contact industry	15	0	100	15
Task 3: Design details	20	5	95	19
Task 4: Construction guidelines	20	25	50	10
Task 5: Complete guidelines	20	30	30	6
Task 6: Prepare report	4	25	85	3.4
Final Report	5	40	40	2
TOTAL	100 %			69.4 %

1.Progress this quarter by task:

Project Progress:The literature search is complete.
Detailed in formation has been gathered on vinyl, concrete, fiberglass, steel, aluminum, block and landscape fences.
The team is also considering the approach of providing fencing on NJDOT property by providing an easement to the adjoining neighbor toselect the type of fence from an approved list and then accepting responsibility for maintenance. This would allow for the use of landscape features that require routine maintenance that is then provided by the adjoining homeowner. This approach has been discussed with the AG's office. It is feasible and their staff is working out the details.

An interim annual report was written this quarter. This brought all of the information gathered in a single document. The various solutions studied were discussed in detail and identified as feasible or not feasible. This document has been reviewed by NJDOT and their comments are being incorporated into the report.

Current products available inthe market place have been studied to modify the basic designs to increase the life span of the product and reduce routine maintenance to the smallest level possible.

The design of all fences has been finalized.

The first draft of the final report is ready for submission.

The project is complete with the exception of obtaining a write-up from the AG's office. This is currently being conducted by the AG's Office on the placement of the privaccy fences on the adjoining property.

The final report has been submitted for review & one meeting has taken place with NJDOT staff on the report.

2. Proposed activities for next quarter by task:

Finalyze the first final report.

3. List of deliverables provided in this quarter by task (product date):

Interim Annual Report.
Method to place fence on adjoining property.

4. Progress on implementation and training activities:

5. Problems/proposed solutions:

none

6. Budget summary:

Total Project Budget (# Years)	2 Year	$101,090.00
Total Project Expenditure to date		$41,409.00
% of Total Project Budget Expended		40.96%
Task Order Number/ Study Number	2 Year	nctip-35
Current Task Order Budget (# of Years)		$50,109.00
Actual Expenditure to Date Against Current Task Order		$13,000.00
% of Current Task Order Budget Expended		25.94%

Quarterly Progress Report

Project Title:	**Computer Modeling and Simulation of New Jersey Signalized Highways - Year II**
RFP Number: 2001-01	**NJDOT Research Project Manager:** Karl Brodtman, NJDOT
Task Order Number/Study Number: 32	**Pincipal Investigator:** Chien, Steven I-Jy
Period Starting: 1/1/02 - 6/30/04 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Review of Literature and Current Practice	4	0	100	4
Prototype Development	10	5	100	10
Site Identification and Data Collection Needs	10	0	100	10
Data Collection	15	0	100	15
Network Modeling with SYNCHRO and CORSIM	15	10	90	13.5
Optimization of Signal Timing Plan with SYNCHRO and CORSIM	20	10	90	18
Generation of Traffic Signal Directives	10	10	60	6
Development of Tutorial for the NJDOT Engineers in the SYNCHRO Environment	8	85	100	8
Final Report with Documentation of SYNCHRO Models	8	20	50	4
Final Report				
TOTAL	100 %			88.3 %

1.Progress this quarter by task:

The tutorial of the model development using Synchro was delivered. A SYNCHRO
model of the optimized intersections was developed for Route 42/322. The developed model was validated based on the balanced flow approval by NJDOT. The balanced flow data were based on traffic count data provided by Louis Berger and Associates. The results of the optimization will be submitted for review and approval by NJDOT in the quarterly report meeting. The timing directives generated from SYNCHRO for Rt. 23 were delivered to NJDOT for real world testing. The draft report for Rt. 23 has been developed and will be dilivered at the quarterly meeting.

2. Proposed activities for next quarter by task:

1. Fine-tune the Route 42/322 base model in Synchro. 2. Finalize timing directives and draft report for the Route 42/322 optimization. 3. Commence cost/benefit analysis for the Routes 23 and 42/322 models.

3. List of deliverables provided in this quarter by task (product date):

SYNCHRO 5.0 Networks (Rt 23 and Rt 42/322)

4. Progress on implementation and training activities:

none yet

5. Problems/proposed solutions:

none yet

6. Budget summary:

Total Project Budget (# Years)	2 Year	$222,078.00
Total Project Expenditure to date		$196,100.00
% of Total Project Budget Expended		88.30%
Task Order Number/ Study Number	2 Year	32
Current Task Order Budget (# of Years)		$72,493.00
Actual Expenditure to Date Against Current Task Order		$66,622.00
% of Current Task Order Budget Expended		91.90%

Quarterly Progress Report

Project Title:	**Corrugated Steel Culvert Pipe Deterioration -Year I**
RFP Number: 2002 – 02	**NJDOT Research Project Manager:** Mr. Robert Sasor
Task Order Number/Study Number: TO-42	**Pincipal Investigator:** Meegoda, Jay N.
Period Starting: 1/1/2003 - 12/31/2004 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Phase I – Literature Search	9.5	0	100	9.5
Phase II – Task 1	6	85	100	6
Phase II – Task 2	6	85	100	6
Phase II – Task 3	6	10	60	3.6
Phase II – Task 4	6	0	0	0
Phase II – Task 5	6	40	40	2.4
Phase II – Task 6	9.5	15	40	3.8
Phase II – Task 7	6	0	0	0
Phase II – Task 8	15.0	0	0	0
Phase II – Task 9	15.0	15	40	6
Final Report	15.0	0	0	0
TOTAL	100 %			37.3 %

1.Progress this quarter by task:

APPROXIMATELY 60%
Literature search, Phase II Tasks 1 and 2 completed.
Approximately 60% of Phase II tasks 3
Approximately 30% of Phase II tasks 5, 6 and 9 are completed.
Phase II Task 3 - Studied means of assessing the condition of CSCP, estimating pipe deterioration rates, and predicting service life for pipes in different parts of the state and with different uses. Developed predictive model and submitted technical paper to TRB. Executed Outside User Agreement with USEPA to
allow use of their Edison Facility for flow testing of used CSCP.
Phase II Task 5 - Determine the best methods and materials for repairing, rehabilitating, or replacing CSCP based on the experiences of other states. Study economic analyses of both methods and materials. Initiated the investigation. Based on the investgation a report will be generated in January
Phase II Task 6 - Study methods of inspection and maintenance record keeping and data storage used by other states. Examine data entry forms. Consider the benefits of storing CSCP pipe data in a centralized database, so that it could be easily accessed statewide to facilitate decision-making. Several meetings were held.

Phase II Task 9 - Determine the conditions for which CSCP should be used in new construction. Obtain cost proposal for instrumented cathodic protection system. Once the system is purchased, testing will commence.

2. Proposed activities for next quarter by task:

Phase II Task 3 - Study means of assessing the condition of CSCP, estimating pipe deterioration rates, and predicting service life for pipes in different parts of the state and with different uses. Perform hudraulic tests for old culverts.

Phase II Task 4. Investigate methodologies for determining the appropriate corrective action (repair, rehabilitate, and replace), and when to take it, to prevent or minimize CSCP failures. Examine methods for prioritizing work.

Phase II Task 5 - Determine the best methods and materials for repairing, rehabilitating, or replacing CSCP based on the experiences of other states. Study economic analyses of both methods and materials.

Phase II Task 6 - Study methods of inspection and maintenance record keeping and data storage used by other states. Consider the benefits of storing CSCP pipe data in a centralized database, so that it could be easily accessed statewide to facilitate decision-making.

Phase II Task 7. Estimate the cost of the statewide preventative maintenance program. Prepare a justification for funding the program, which compares program costs to the savings realized from preventing pipe and roadway collapses and the ensuing traffic delays (user costs) and expensive roadway repair.

Phase II Task 9 - Determine the conditions for which CSCP should be used in new construction.

3. List of deliverables provided in this quarter by task (product date):

Phase II Task 1 - Contact other state DOT's, Technical Memorandum summarizing same.

4. Progress on implementation and training activities:

None

5. Problems/proposed solutions:

User agreement took more time than anticipated and hence field tests were postponed to year II.

6. Budget summary:

Quarterly Progress Report

Total Project Budget (# Years)	2 Year	$282,766.00
Total Project Expenditure to date		$32,000.00
% of Total Project Budget Expended		11.32%
Task Order Number/ Study Number	1 Year	TO-42
Current Task Order Budget (# of Years)		$91,863.00
Actual Expenditure to Date Against Current Task Order		$32,000.00
% of Current Task Order Budget Expended		34.83%

Quarterly Progress Report

Project Title:	**Pedestrian Safety and Mobility Aids for Crossings and Access to Bus Stops**
RFP Number: 42	**NJDOT Research Project Manager:** Nancy Ciaruffoli, NJDOT
Task Order Number/Study Number: NCTIP-42	**Pincipal Investigator:** Jeng, One-Jang
Period Starting: 1/1/2002 - 06/30/2003 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Task 1.1 Literature Search	10	100	100	10
Task 2.1 ¡V Develop Initial Criteria for Site Selection	10	100	100	10
Task 2.2 - Select Potential Candidate Sites	5	100	100	5
Task 2.3 - Perform Initial Evaluation	10	75	100	10
Tasks 2.4 - Recommend Final Locations	10	10	100	10
Task 2.5 Develop Innovative Solutions Strategies and Aids	20	80	100	20
Task 2.6 ¡V Perform Detailed Evaluation	20	70	100	20
Task 2.7 - Develop Implementation Plan	10	80	100	10
Task 2.8 Final Report	5	100	100	5
Final Report				
TOTAL	100 %			100.0 %

1.Progress this quarter by task:

The research team submit its revised final report draft to NJDOT on the first week of August. The team has been working on comments received from NJDOT.

The final report will be completed and submitted before the September Quarterly Progress Meeting.

2. Proposed activities for next quarter by task:

3. List of deliverables provided in this quarter by task (product date):

4. Progress on implementation and training activities:

5. Problems/proposed solutions:

6. Budget summary:

Quarterly Progress Report

Total Project Budget (# Years)	1 Year	$133,469.00
Total Project Expenditure to date		$119,038.00
% of Total Project Budget Expended		89.19%
Task Order Number/ Study Number	1 Year	NCTIP-42
Current Task Order Budget (# of Years)		$70,825.00
Actual Expenditure to Date Against Current Task Order		$69,489.00
% of Current Task Order Budget Expended		98.11%

Quarterly Progress Report

Project Title:	**Alternate Performance Measures for Evaluating Congestion**
RFP Number: 2001-20	**NJDOT Research Project Manager:** Nancy Ciaruffoli
Task Order Number/Study Number: NCTIP-41	**Pincipal Investigator:** Rowinski, Jakub P
Period Starting: 01/01/2002 - 08/31/2003 (Start-End Date of Study)	**Period Ending:** 12/18/2003

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Task 1.1 Literature Search	8	0	100	8
Task 1.2 Literature Search Presentation	8	0	100	8
Task 2.1 Current Congestion Data	8	60	100	8
Task 2.2 Existing Performance Data	8	80	100	8
Task 2.3 Existing Congestion Baseline	16	20	100	16
Task 2.4 Labor and Industry Data	8	0	100	8
Task 2.5 Determine Costs of Congestion	16	40	100	16
Task 2.6 Study Program Effectiveness	12	100	100	12
Task 2.7 Quarterly Progress and Final Report	8	40	100	8
Task 3.1 Demonstration/Initial Training	4	50	50	2
Task 3.2 Follow-up Training Session	4	0	0	0
Final Report				
TOTAL	100 %			94.0 %

1.Progress this quarter by task:

Phase II

Task 7: Prepare quarterly progress and final report with appropriate tables, graphs and charts.

The draft final report was prepared and submitted to the project manager during the previous quarter. Following the review by the NJDOT, NJIT discussed the report with the client during an extensive conference call. Most of the feedback has been incorporated. Additional analysis was performed on congested locations identified by the survey respondents. This analysis will be incorporated into the final report.

Phase III

NJIT has began assembling the materials necessary for the implementation/training of the congestion program.

2. Proposed activities for next quarter by task:

Task 2.7: Incorporate feedback into the final report

Phase III - Implementation and training of the congestion program

3. List of deliverables provided in this quarter by task (product date):

Draft Final Report

4. Progress on implementation and training activities:

None

5. Problems/proposed solutions:

None

6. Budget summary:

Total Project Budget (# Years)	1 Year	$185,781.61
Total Project Expenditure to date		$170,980.00
% of Total Project Budget Expended		92.03%
Task Order Number/ Study Number	1 Year	NCTIP-41
Current Task Order Budget (# of Years)		$0.00
Actual Expenditure to Date Against Current Task Order		$0.00
% of Current Task Order Budget Expended		0.00%